

GINSTLING, A.M., doktor tekhn.nauk, prof.; BARAM, A.A., inzh.

Rotating high-frequency apparatus for mass-exchange processes.

Khim.mash. no.1:4-5 Ja '60. (MIRA 13:5)

(Chemical engineering--Equipment and supplies)

(Mass transfer)

5.3831
AUTHORS:Ginstling, A. M., Baram, A. A.69679
S/153/60/003/01/046/058
B011/B005TITLE: Influence of Elastic Mechanical Vibrations on the Process of Extraction of Impurities From Polyethylene η

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol 3, Nr 1, pp 170-171 (USSR)

TEXT: The authors ascertained a considerable acceleration of the extraction process of inorganic impurities from polyethylene preparations in an intensive ultrasonic field. In the industrial catalytic production of polyethylene according to K. Ziegler (Refs 1, 2), the polymer is contaminated by residues of the catalyst and by decomposition products of the latter. This affects the quality of polyethylene. In the polymerization of polyethylene in benzene of the "galosha" type, the removal of inorganic impurities (triethyl aluminum and titanium tetrachloride) proceeds very slowly. In spite of repeated washing and mechanical stirring, the removal of impurities succeeds only at 40-60% (corresponding to an ash content of 0.35 - 0.6%). The authors have been investigating the kinetics of the removal of impurities by ultrasonics since 1957. Figure 1 shows the piezoquartz apparatus used for experiments. The thin, sound-permeable bottom (2) of the column (1) consists of polyethylene. The temperature during ultrasonic irradiation was maintained at 17-20° by a continuous passage of rinsing liquid. A low-pressure polyethylene powder was filtered from the mother liquor until about 150% of benzene remained behind (converted to dry weight). The powder was then suspended in a small amount

Card 1/2

69679

Influence of Elastic Mechanical Vibrations on the Process of Extraction of Impurities From Polyethylene S/153/60/003/01/046/058
B011/B005

of rinsing liquid (OP-7), and put into the column (1). The polyethylene originally situated in the upper layer is distributed over the entire height of the column, and exposed to a strong action of the solution in the field of intensive ultrasonic vibrations. The optimum height of the powder depends on the thickness of its layer and on the parameters of the acoustic field (frequency and intensity of oscillations). The frequency was 717 kilocycles, the intensity 7 watt/cm², the thickness of the powder layer 4.5-5 cm. Figure 2 shows the kinetics of the removal of impurities. It shows that an ultrasonic irradiation with intensive oscillations effects a more thorough (by the 1.3-1.5-fold) cleaning in a much shorter period of the time than is realized by a simple mechanical removal. The degree of extraction of impurities is unequal for different polyethylene samples. There are 2 figures and 3 references, 1 of which is Soviet.

ASSOCIATION: Leningradskiy tekhnologicheskii institut im. Lensovet; Kafedra protsessov i apparatov (Leningrad Technological Institute imeni Lensovet ; Chair of Procedures and Apparatus)

SUBMITTED: February 16, 1959

Card 2/2

BARAM, A. A.

PHASE I BOOK EXPLOITATION

SOV/4942

Ginstling, Arkadiy Mikhaylovich, and Arkadiy Azar'yevich Baram

Ul'trazvuk v protsessakh khimicheskoy tekhnologii (Ultrasonics in the Processes of Chemical Technology) Leningrad, Goskhimizdat, 1960.
95 p. 10,000 copies printed.

Ed.: V. A. Kots; Tech. Ed.: T. A. Fomkina.

PURPOSE: This book is intended for scientific and technical personnel of the chemical, petroleum-refining, food, pulp and paper, and textile industries. It may also be used as a textbook in schools of higher education specializing in these fields.

COVERAGE: The book deals with the basic principles of ultrasound and its application to processes of chemical technology. The effect of ultrasound vibrations on media is analyzed and methods of producing acoustic vibrations with the aid of transducers are described. The use of ultrasound in mechanical, hydromechanical, heat exchange, and mass exchange processes are discussed along with methods for selection of process conditions and parameters for apparatus. No

Card ~~1/4~~

Ultrasonics in the Processes (Cont.)

SOV/4942

personalities are mentioned. There are 199 references: 77 English, 75 Soviet, 29 German, 14 French, and 4 Polish.

TABLE OF CONTENTS:

Foreword	4
Introduction	5
Ch. I. Physical Principles of the Effect of Ultrasound Vibrations on a Medium	
General aspects	8
Parameters of the acoustic field of traveling waves	9
Standing sound waves	11
Secondary effects	11
Ultrasonic cavitation	15
Sound transmission through the interface of media	17
Thermal action of ultrasound	19
Measuring the intensity of ultrasound	21

Card ~~2/4~~

GINSTLING, A.M.; BARAM, A.A.

Role of ultrasound in the processes of chemical technology. Khim.
prom. no.1:9-19 Ja-F '60. (MIRA 13:7)
(Ultrasonic waves--Industrial applications)

S/064/61/000/009/001/002
B110/B101

AUTHORS: Ginstling, A. M., (Deceased), Baram, A. A.

TITLE: Extraction of benzine and inorganic impurities from polyethylene in rotary apparatus

PERIODICAL: Khimicheskaya promyshlennost', no. 9, 1961, 23 - 28

TEXT: Water, alcohol, and alcohol-benzine mixture are used for extracting inorganic impurities from low-pressure polyethylene (PE). Water is continuously removed by air at 100 - 120°C. The present paper shows that the effect of elastic mechanic oscillations considerably accelerates the aqueous extraction in the rotary apparatus. The device described by the authors (Ref. 7: Khim. mash., No. 1, 4 (1960); Ref. 8: Ul'trazvuk v protsessakh khimicheskoy tekhnologii (Ultrasonics in Processes of Chemical Technology), Goskhimizdat, 1960) consists of two sets of coaxial cylinders with openings. The openings of the rotating cylinders (rotor set) coincide with those of the fixed cylinders (stator set) and are shifted again in rapid alternation. This causes pulsation, dispersion phenomena, and cavitation of the liquid penetrating into the inner cylinder and then

Card 1/5

Extraction of benzine and inorganic...

S/064/61/000/009/001/002
B110/B101

radially flowing through all the cylinders. The rotor of the laboratory apparatus (Fig. 1) was driven by a d-c motor (6) of 1000 - 2500 r.p.m. Its speed was measured by an electromagnetic speedometer (1). PE (~30%) was separated from benzine (~70%) by filtration, was mixed with distilled water or an aqueous emulsifying solution, and introduced into the apparatus by (2), and (3). The PE powder coming out of the outer cylinder, was treated again, or filtered and dried. γ -Ti and Al compounds formed by the catalyst (TiCl_4 and $\text{Al}(\text{C}_2\text{H}_5)_3$) are hydrolytically or mechanically leached out. Two to three hours after the process, ~60 - 70% of the leached out compounds in aqueous solution is determined with the aid of Trilon B. Approximately 30 - 40 % is suspended in the wash water. Treatment in the rotary apparatus for a few seconds causes the same extraction as stirring for several hours. In addition, a wetting agent which would deteriorate the dielectric properties of PE, need not be added. The pulsation frequency, which affects the degree of extraction, considerably depends directly on the number of openings and on the rotational speed. The ratio PE : H_2O is of no effect. In the temperature range 15 - 65°C of the wash water,

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Card 2/5

Extraction of benzine and inorganic...

S/064/61/000/009/001/002
B110/B101

extraction decreases by a temperature rise from 15 - 35°C in the first phase of leaching, whereas it becomes constant by a further rise. In the third phase, benzine is completely removed at 73°C. The heat and mass exchange, required for removing benzine (size of drops 20 - 30μ), are accelerated by an increase of the surface due to intense turbulence of flow and phase dispersion. Collaborators O. A. Kokushkin and N. F. Grigor'yeva of the Leningradskiy tekhnologicheskii institut tsellyulozno-bumazhnoy promyshlennosti (Leningrad Technological Institute of the Cellulose and Paper Industry), and S. V. Shutskiy, A. G. Pozamantir, Z. P. Belogradova, K. I. Ivanov, and S. A. Shibalovskaya of the Okhtinskiy khimicheskii kombinat (Okhta Chemical Combine) tested a three-stage continuous test plant. The diameter of the three tanks of the > 700 liter/hr apparatus in cascade arrangement is 220 mm, its height is 350 mm, and the diameter of the outer stator cylinder is 100 mm; rotor speed: 2950 - 3000 r.p.m. The first stage of the plant was filled with an aqueous suspension of PE or with powdery PE containing 200 - 300% of benzine (with respect to the dry weight of PE). The liquid is conducted from one stage to another through pipes, or with the aid of rotating vanes. In stage I, inorganic impurities were extracted at $t \leq 20^{\circ}\text{C}$ with water free from emulsifiers.

Card 3/5

Extraction of benzene and inorganic...

S/064/61/000/009/001/002
B110/B101

The PE particles remained in the plant for 7 - 10 sec; the ratio in stage I was $H_2O:PE < 10:1$. The following data were determined: ash content,

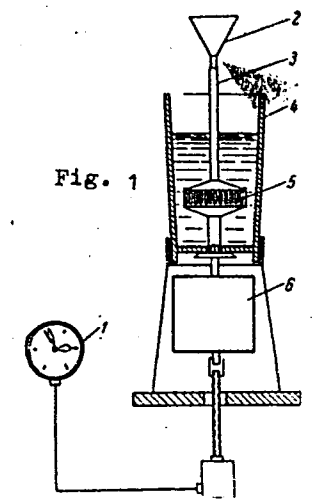
physicomechanical and dielectric properties of PE, effect of water temperature and time of process. 55 - 75% of the inorganic substances are extracted by the optimum three-stage plant. The porous structure of PE affects the degree of extraction. In stage III, a rise from 35 to 85°C somewhat increases the extraction of inorganic substances. A temperature rise from 50 to 75°C considerably increases the benzene extraction, and at $>75^\circ C$ it is practically 100%. An increase in the output of the apparatus from 3 to 30 kg of dry PE per hour does not affect the extraction. When the apparatus is filled with an aqueous PE suspension, it is 60 - 70 kg of dry PE per hour. This method does not affect the mechanical properties but improves the dielectric properties. Technologically, however, it can still be improved by reducing the amount of catalyst and by using an N_2 atmosphere, deaerated water, and several other additions. A large plant provides for the counterflow movement of phases of different specific weights in various systems. Inorganic substances and benzene may be extracted separately or simultaneously. There are 8 figures, 7 tables, and Card 4/5

Extraction of benzine and inorganic...

S/064/61/000/009/001/002
B110/B101

8 references: 5 Soviet and 3 non-Soviet.

Fig. 1: Diagram of the laboratory rotary unit.
Legend: (1) speedometer; (2) funnel; (3) feed
pipe; (4) reaction vessel; (5) rotary device;
(6) d-c motor.



Card 5/5

BARAM, A.A.

Extraction of impurities from polyethylene in an ultrasonic field. Akust. zhur. 7 no.3:375-377 '61. (MIRA 14:9)

1. Leningradskiy tekhnologicheskoy institut tsellyulozno-bymazhnoy promyshlennosti.

(Ultrasonic waves) (Ethylene polymers)

241700

37535
S/046/62/008/002/014/016
B104/B108

AUTHORS: Baram, A. A., Kokushkin, O. A.

TITLE: Characteristics of one type of acoustic siren

PERIODICAL: Akusticheskiy zhurnal, v. 8, no. 2, 1962, 238-240

TEXT: The acoustic characteristics of a rotary liquid siren (Fig. 1) were examined. The space between rotor (1) and stator (2) is 0.2 mm, rotor and stator have 48 rectangular openings (20 by 3 mm). At 3000 rpm and atmospheric pressure, the discharge of the apparatus was about 1000 l per hour. The total sound pressure increased from about 2000 bars at 800 rpm to about 30,000 bars at 2850 rpm. The spectrum of sound pressure depends on the frequency (Fig. 4) and shows a cavitation effect between 2.8 and 6.2 kc/sec. There are 4 figures. f

ASSOCIATION: Leningradskiy tekhnologicheskii institut tsellyulozno-bumazhnoy promyshlennosti (Leningrad Technological Institute of Cellulose and Paper Industry)

~~SECRET~~

BARAM, A.A., inzh.; KOKUSHKIN, O.A., inzh.

~~Investigating the spectrum of the sound pressure in a rotary~~
apparatus. Trudy LTITSBP no.11:209-211 '62. (MIRA 16:10)

BARAM, A.A.

Emulsion extraction of a complex catalyst from polyethylene dispersions. Zhur.prikl.khim. 35 no.12:2605-2612 D '62. (MIRA 16:5)

1. Leningradskiy tekhnologicheskii institut tsellyulozno-bumazhnoy promyshlennosti.

(Polyethylene) (Catalysts)

BARAM, A.A.; KOKUSHKIN, O.A.; MISHCHENKO, K.P.; FLIS, I.Ye.

Laboratory study of the extraction of a complex catalyst from
polyethylene dispersions by methanol in rotary apparatus.
Plast. massy no.8:7-11 '63. (MIRA 16:8)

(Polyethylene)

(Catalysts)

BARAM, A.A.

Mechanism and the kinetics of the extraction with methanol of a complex catalyst from polyethylene dispersions. Zhur.prikl.khim. 36 no.1:102-109 Ja '63. (MIRA 16:5)

1. Leningradskiy tekhnologicheskij institut tsellyulozno-bumazhnoy promyshlennosti.
(Polyethylene) (Catalysts)

BARAM, A.A.; KOKUSHKIN, O.A.; MISHCHENKO, K.P.; FLIS, I.Ye.; ARKHIPOVA,
Z.V.; VAVILOVA, I.I.; MONAKHOVA, Ye.V.; SHCHUTSKIY, S.V.

Recovery of complex catalysts from dispersions of polyethylene
by means of methanol in a rotary apparatus. Plast. massy
no.11:58-59 '63. (MIRA 16:12)

BARAM, A.A.

Physicochemical fundamentals of the technology for the extraction
of substances from porous bodies. Khim. prom. no.2:142-148 F '64.
(MIRA 17:9)

BARAM, A.A.

Mechanism of the removal of suspension type impurities from
styrene copolymers. Plast. massy no.8:63-64 '65. (MIRA 18:9)

BARAM, A.A.; MISHCHENKO, K.F., doktor khim.nauk, prof.; FLIS, I.Ye.

Mechanism, kinetics and intensification of the processes of
admixture extraction from polymer dispersions. Trudy LTITSBP
no.12:82-94 '64. (MIRA 18:8)

L 17603-65 EXT(1) ASD(a)-5/ASD(f)-2/ESD(gs)
ACCESSION NR: AP4049293

S/0046/64/010/004/0001/0001

AUTHOR: Baram, A. A.

TITLE: On the mechanism of emulsification in an acoustic field

SOURCE: Akusticheskiy zhurnal, v. 10, no. 4, 1964, 398-402

TOPIC TAGS: acoustic field, emulsification, dispersion

ABSTRACT: In view of the fact that none of the hitherto advanced hypotheses is capable of explaining all the experimental facts on the emulsification in an acoustic field, the authors have examined various factors influencing the process. It is shown that a major role is played by small-scale pulsations of the medium. Two stages are distinguished in the acoustic emulsification process: 1. Formation of the phase-separation nuclei.

Cont. 1/2

L 17803-65

ACCESSION NR: AP4049293

tion of surface capillary waves. 2. Detachment of drops from the crests of the waves. The pulverization of droplets of dimensions may be due to resonance between the frequency of natural capillary vibrations of the drop and the frequency of the surface waves. 3 formulas.

ASSOCIATION: Leningradskiy tekhnologicheskii institut
bumazhnogo promyshlennosti (Leningrad Technological
Institute of Paper Industry)

SUBMITTER: [illegible]

SUB CODE: GP

NR REF SOV: 013

OTHER: [illegible]

Card 2/2

BARAM, A.A.; GRIGOR'YEVA, N.F.

High-speed determination of the impurities of a complex catalyst in
polyolefins in the process of washing with alcohol. Plast. massy no.2:
66 '65. (MIRA 18:7)

SOV/137-58-12-24446

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 71 (USSR)

AUTHORS: Baram, A. N., Nakhimov, A. M., Kozin, M. D.

TITLE: The Rolling of Flat and Round Spring Steel at the Kirov Plant (Prokatka ressnoroy i pruzhinnoy stali na Kirovskom zavode)

PERIODICAL: Tr. Mezhvuz. nauchno-tekhn. konferentsii na temu. 'Sovrem. dostizh. prokatn. proiz-va'. Leningrad, 1958, pp 151-154

ABSTRACT: A new pass grooving for grooved flat spring steel permitting precise positioning of the projection and depression is developed and introduced. An initial 11x88 strip is reeled from a square 60x60 mm billet in 3 open passes (P), whereupon it is sent to an edging pass that brings the side edges to proper dimensions. Next come a closed P and an edging and finishing open P. Since the strip enters the closed P with a width determined in the first edging P, the projection and the depression are formed to sufficient accuracy. In order to produce spring of round section without scratches, laps, and seams, the billet has to be conditioned over its entire surface; hence prior to the rolling of round spring steel the leader and finishing rolls should be changed and roller guides brought into position. The

Card 1/2

The Rolling of Flat and Round Spring Steel at the Kirov Plant (cont.) SOV-137-58-12-24446

system of immersing the billets in the furnace is changed so that the springs produced will be decarburized to minimum depth. They are now emplaced not in 3 layers but in one, and this reduces by two-thirds the soaking time of the metal in the furnace.

Ya. G.

Card 2/2

BARAM, B.M.; MARKMAN, A.L.

Oil of Poterium polygamun seeds. Uzb. khim. zhur. 7 no.4:
47-52 '63. (MIRA 16:10)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR.

BABAM, B.M.; MARKMAN, A.L.; UMAROV, A.U.

Acorn oil of Quercus robur. Uzb. khim. zhur. 9 no. 4:28-32
'65. (MIRA 18:12)

1. Institut khimii rastitelnykh veshchestv AN UzSSR. Submitted
Dec. 18, 1963.

MARKMAN, A.L.; UMAROV, A.U.; BARAM, B.M.; DOMANSKAYA, E.E.

Oils from certain species of Cruciferae. Khim.prirod.sosd.
no.4:295-296 '65.

(MIRA 1981)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR.
Submitted January 27, 1965.

BR

ACCESSION NR: AP4019499

S/0078/64/009/003/0738/0741

AUTHORS: Baram, I.I.; Laskorin, B.N.

TITLE: Extraction of hydrofluoric acid with tri-n-butylphosphate

SOURCE: Zhurnal neorg. khimii, v. 9, no. 3, 1964, 738-741

TOPIC TAGS: hydrofluoric acid, extraction, tributylphosphate, rare metal extraction, extraction mechanism, distribution ratio, partition coefficient, hydrofluoric acid tributylphosphate monosolvate, graphic method, isomolar series method

ABSTRACT: In the technology of rare metal extraction with tri-n-butylphosphate (TBF) hydrofluoric acid media, particularly when H_2SO_4 or other mineral acids are used, the acid concentrations in the original solutions exceed the rare metal concentration. The conditions and mechanisms of extracting HF with TBF are therefore of interest. The distribution of HF in HF- H_2O -TBF, in HF- H_2SO_4 - H_2O -TBF, and in HF- H_2O -TBF-kerosene systems was investigated. The

Card 1/2

ACCESSION NR: AP4019499

partition coefficient of H_2SO_4 between H_2O and TBF in the presence of HF decreases with increase in HF. The extraction mechanism was studied by the graphic method and the isomolar series method (both described by V.V. Fomin. Khimiya ekstraktsionny*kh protsessov. (Chemistry of Extraction Processes), Atomizdat, 1960, str. 54) to determine the relationship of $lg D_{HF} = f(lg [TBF]_o)$ where D_{HF} is the partition coefficient of HF, and $lg [TBF]_o$ is the equilibrium concentration of free TBF in the organic phase. By examining the HF concentration in the organic and aqueous phases on extracting with a kerosene solution of TBF, it was determined that the HF:TBF ratio is 1:1, hence the HF.TBF monosolvate is formed. The equilibrium constant K is 0.3 ± 0.03 . Orig. art. has: 4 figures and 1 table and 7 equations.

ASSOCIATION: None

SUBMITTED: 18Feb63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: CH

NO REF SOV: 011

OTHER: 009

Card 2/2

L 36702-65 EPP(n)-2/EPR/EWT(m)/EWG(m)/EWP(b)/EWP(t) Ps-L/Pu-L IJP(c) JD/JG

ACCESSION NR AP5005016

S/0078/65/010/002/0507/0511

AUTHOR Baram, I. I., Kaplan, G. Ye., Laskorin, B. N.

TITLE: The mechanism of extracting tantalum and niobium with tri-n-butylphosphate
27 27

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 2, 1965, 507-511

TOPIC TAGS: tantalum extraction, niobium extraction, tributylphosphate, tantalum fluoride tributylphosphate complex, niobium fluoride tributylphosphate complex

ABSTRACT: The mechanism of extraction of Nb and Ta in the system 2.5 mol HF + 4 mol H₂SO₄ - tributylphosphate (TBP) was studied. The series mechanism by the shift of equilibrium. The first mechanism of extraction of TBP as the tri-solvate H₂NbF₇ · 3TBP or H₂NbF₇ · 2TBP, and the second mechanism as the di-solvate H₂TaF₇ · 2TBP or HTaF₆ · 3TBP. The authors indicate the tri-solvate formation with Nb, but indicate that the di-solvates H₂TaF₇ · 3TBP and H₂TaF₇ · 4TBP. Thus at high concentrations the tantalum complex is solved with 2 molecules of TBP, but at lower concentrations the

Card 1/2

Y 36702-65

ACCESSION NR: AP5005016

number of TBP solvate molecules increased to 3 and 4. Orig. art. has 2 figures
2 tables and 8 equations

ASSOCIATION: None

SUBMITTED: 03Aug63

ENCL: 00

SUB CODE: 00

NR REF SOV: 005

OTHER: 002

Cord 2/2

L 50257-65

AUTHOR: Kaplan, I. I. ; Baran, I. I.

TITLE: Extraction of oil from extraction from chloride
1970

SOURCE: Zhurnal neorganicheskoy khimii, v. 15, no. 3, 1970, p. 1-3

THIS document contains information on the extraction of oil from
chloride

THE authors have studied the extraction of oil from chloride
respect to the concentration of hydrochloric and sulfuric acid, the
H₂SO₄ - concentration to determine the optimum extraction conditions.

THE authors have found that an increase in the partition coefficients of
oil from chloride extraction also increased the extraction efficiency.
The authors have also found that the extraction efficiency of oil from
chloride is also increased by the addition of a small amount of
hydrochloric acid.

L 52257-65

ACCESSION NO. 100-100000

occurs at the HF... and H... concentration...
The extraction... in Table 1...
is to be... of extraction...
... ..

... ..
table.

ACCESSION: 10000

L 52357-65

ACCESSION NR: AP5008886

ENCLOSURE - 0

Tracer partition coefficient

Tracer partition coefficient H_2SO_4 - THF

RF content

Tracer

Tracer

Card 1920

BARAM, I.I.

Kinetics of dissolution of niobium and tantalum pentoxides in
hydrofluoric acid. Zhur. prikl. khim. 38 no.10:2181-2188
Q '65. (MIRA 18:12)

1. Submitted August 5, 1963.

BARAM, I.I.

Study of the mechanism of extraction by measuring the viscosity of the isomolar series. Zhur. neorg. khim. 10 no.9:2184-2186 S '65.

(MIRA 18:10)

BARAM, Kh.; KUZIN, F.

Study of time expended on tractor work in agriculture. Sots.trud
5 no.1:88-92 Ja '60. (MIRA 13:6)
(Agriculture--Production standards)

BARAN, Kh. G. Cand Tech Sci

Dissertation: "Influence of the Regularity
of Clutch Engaging on the Parameters of
Engine Over speed."

18/12/50

Moscow Order of the Labor Red Banner Higher
Technical School imeni Bauman.

FO Vecheryaya Moskva
Sum 71

BARAM, Kh.G., kand.tekhn.nauk

Methods of establishing production norms for tractors at machine-tractor stations. Mekh. i elek.sots.sel'khoz. no.5:28-32 '56.
(MIRA 12:4)

1. Gosudarstvennyy soyuznyy nauchno-issledovatel'skiy tekhnologicheskoy institut remonta i ekspluatatsii traktorov i sel'skokhozyaystvennykh mashin.

(Tractors)

BARAM, Kh.G., kand.tekhn.nauk

Methods of assigning work norms for tractors and our experience
in introducing these methods. Mekh.i elek.sots.sel'khoz. 17
no.6:27-31 '59. (MIRA 13:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mekhanizatsii
sel'skogo khozyaystva.
(Tractors)

ADRASHEV, G.R., kand.tekhn.nauk; ~~BARAM, Kh.G.,~~ kand.tekhn.nauk;
VAS'KOVSKIY, S.Ye., inzh.; VOSTRIKOV, N.A., inzh.; IVANOV, N.A.,
inzh.; NANKIN, G.A., inzh.; POLYAK, A.Ya., kand.tekhn.nauk;
BOLTINSKIY, V.N., akademik, red.; VOLKOV, G.I., inzh.; red.; LEVYKIN,
N.N., kand.tekhn.nauk, red.; PORTNOV, M.N., kand.tekhn.nauk, red.;
BUD'KO, V.A., red.; TRUKHINA, O.N., tekhn. red.

[Tractor performance at increased speeds] Traktornye raboty na
povyshennykh skorostiakh. Moskva, Sel'khozgiz, 1961. 174 p.

(MIRA 15:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut me-
khanizatsii sel'skogo khozyaystva.

(Tractors)

BARAM, Kh.G., kand.tekhn.nauk

Special problems in establishing work standards for tractors operated at increased speed. Mekh.i elek.sots.sel'khoz. 19 no.5:31-35 '61.
(MIRA 14:10)

1. Gosudarstvennyy vsesoyuznyy nauchno-issledovatel'skiy tekhnologicheskiy institut remonta i ekspluatatsii mashinno-traktornogo parka.

(Tractors)

SOV/32-24-9-12/53

AUTHORS: Lukashova, Ye. N., Baram, N. M., Kuznetsova, V. G.

TITLE: Method for the Analysis of the Copper-Borofluoro Borate
Electrolyte (Metodika analiza borftoroboratno-mednogo elektrolita)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 9, pp 1067-1068 (USSR)

ABSTRACT: At this institute (no name given) the copper separation is carried out from electrolytes containing copper-fluoro borate $\text{Cu}(\text{BF}_4)_2$, free fluoboric acid HBF_4 , and boric acid H_2BO_3 . In the laboratories of the institute, a method for the control of these electrolytes was developed. It is based on an electrolytical separation of copper from the solution and a subsequent hydrolytic splitting of the fluoboric acid by means of boiling with magnesium sulfate. In this process, sulfuric acid is formed in a quantity equivalent to the content of fluorions. The sulfuric acid can be titrated with a base (indicator methyl red). The initial boric acid, as well as that produced by hydrolysis, can be titrated with mannite or invert sugar (indicator bromothymol blue). The analysis takes 3 - 4 hours, and yields good results. A table of the results obtained and the analytical procedure are given.

Card 1/2

1ST AND 2ND COPIES		PROCESSING AND PROPERTY INDEX		3RD AND 4TH COPIES	
BARAM D.V.				2	
isomerism of lyophobic colloids. I. The cinnabar alcohol. Yu. M. (Garmann and O. M. Baram (Kiev Tech. Inst. Light Ind.). <i>J. Gen. Chem.</i> (U.S.S.R.) 16, 1815-12 (1946) (in Russian). In a soln. of $Hg(CN)_2$ in $EtOH$, forms a HgS sol of orange-red color (I), different from the usual dark-brown sol (II); the latter does not at any appreciable rate go over into I above -18°, but between -21° and -78° the transformation is complete in 2-4 hrs., the slower the lower the temp. Interruption of the cooling after 5-10 min. with the alcohol of II by H_2S and return to room temp. caused accelerated conversion into I, completed in 10-15 min. Consequently, low temp. is necessary only in the initial stages of the reaction between $Hg(CN)_2$ and H_2S; the subsequent stage of transition of II into I goes faster at a higher temp. By x-ray diffraction, I was shown to be identical with pure cinnabar, whereas II is known to be structurally metacinnabarite. In $MeOH$, $PrOH$, $EtOH$, and $AmOH$, transition of II into I takes place in the same temp. range as in $EtOH$. In alic. contg. 25% H_2O, the threshold temp. for the transition is -25°, with 50% H_2O, -21°; a 66% H_2O alic. mixt. freezes before the threshold temp. is reached. The conversion does not take place in Me_2CO, the presence of which in an alic. suppresses the II $\rightarrow$ I transition altogether. The detg. factor for the initiation of the conversion appears to be a sufficient concn. of H_2S; in fact, the observed threshold temps. correspond to the same "threshold concn." of H_2S in the various solvents, 1.543 mole/l.; this concn. cannot be attained in water or in water-rich alic., hence the failure to achieve conversion in these media. This factor does not, however, explain the neg. effect of Me_2CO in which the soly. of H_2S is somewhat higher than in alic. Sol II when formed at a high temp. cannot be converted into I by subsequent cooling; only a sol formed from the very beginning at a low temp. is susceptible of conversion. This reactivity is tentatively ascribed to formation of low-stability HgS_n complexes from which HgS crystallizes in the cinnabar lattice, in analogy to a certain extent with the usual artificial prepn. of cinnabar from black HgS by heating with alk. sulfides. The neg. effect of Me_2CO may be due to complex formation with HgS, precluding addn. of H_2S to complex formation with HgS, precluding addn. of H_2S. Sol I cannot be obtained at any temp. from solns. of the $HgCl_2$ or $Hg(AcO)_2$, probably because of decompn. of the HgS_n complexes by the H ions liberated from H_2S; from this point of view, it is understandable that the conversion is possible only if the HgS is formed from the undissoc. $Hg(CN)_2$. N. Thon					
ASB-ELA METALLURGICAL LITERATURE CLASSIFICATION					
195000 H17 007 521					

1st and 2nd copies PROCESSED AND PROPERTIES INDEX

BARAM, O.M.
C A

Kinetics of solution of sodium chloride monocrystals
M. Toyko and O. Matyts. *Zhur. Fiz. Khim.* 23, 413,
19(1949). The rate of soln., v , of NaCl in H₂O increased
with the frequency, n , of rotations of the stirrer propor-
tional to $n^{0.5}$ between 250 and 2800 r.p.m. At small
Reynolds no. ($Re < 2000$), v was independent of temp.
between 10° and 30°, showing that the rate was ruled by
hydrodynamic conditions; at greater Re up to 10,000 v in-
creased with temp., showing that it was affected also by the
true velocity of soln. T's theory (C.A. 41, 2070b)
yields $v = KDS(C - c)/(Kd + D)$, in which K is a
const., D the diffusion coeff., S the surface area of the
solid, C the concn. of the satd. soln., c the variable concn.
of the soln., and d the thickness of the diffusion layer.
At great n , $d = 0$, contrary to the usual theory of soln.
The (110) face had a greater v than (110); the ratio was
1.0 at $n = 250$ and 1.07 at $n = 1800$, because rapid soln.
transformed (110) face into a multitude of (110) faces.
Gum arabic (1.5%) lowered v by 10 and 54% at $n =$
250 and 1780, resp. In H₂O satd. with PhOH at 20° v
was by 25% lower than in H₂O whatever n , showing that
the effects of PhOH and of gum arabic have different
mechanisms. Small addns. of PhOH (< 0.07 mol.) did
not affect v .
I. I. Birkman

Inst. Advanced Training for Pharmacists, Kiev

ASB-55A METALLURGICAL LITERATURE CLASSIFICATION

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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BARAM, O. M.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 116 - 9/24

Authors : Tovbin, M. V., and Baram, O. M.

Title : The kinetics of iodine desorption from activated carbon

Periodical : Ukr. khim. zhur. 21/2, 205-210, 1955

Abstract : An equation based on the quasi stationary concentration method was formulated for the purpose of determining the rate of desorption of a substance from a porous adsorbent at static conditions. The desorption kinetics of iodine from carbon was investigated at static conditions and it was found that the timely course of the entire desorption process is well described by this equation. The effect of various factors (mixing intensity of solution, temperature, carbon grain dimension, iodine concentration in desorbing liquid) on the desorption kinetics for iodine is explained. Twelve USSR references (1928-1954). Tables; graphs.

Institution : The Kiev Automobile and Road Inst., The Nezhinsk Pedagogical Inst.

Submitted : January 9, 1954

BARAM, O.M.

USSR/Physical Chemistry - Kinetics. Combustion.
Explosives. Topochemistry. Catalysis.

B-9

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3826

Author : Baram O.M.

Title : Kinetics of Polymorphous Transformation of Mercuric Iodide

Orig Pub : Ukr. Khim. zh., 1956, 22, No 2, 137-142

Abstract : A microscopic investigation was made of the kinetics of transformation of monocrystals of yellow modification of HgI_2 into the red modification at temperatures $< 127^\circ$. It is shown that linear velocity of transformation depends upon a number of factors (state of the surface, presence of adsorbed alcohol, dimensions of crystals) and increases on rise of temperature from 15 to 82° . Quantitatively, the extent of transformation of thin laminar crystals was determined by the ratio of surface areas of yellow and red zones on microphotographs. The author considers that kinetics of the process is defined by the general

Card 1/2

- 135 -

BARAM, O.M.; SOLDATOV, M.P.

Part 11 Study of intermediate compounds in the series $\text{Na}_2\text{S}_2\text{O}_3$ --
 $\text{Na}_2\text{Se}_2\text{O}_3$. Zhur.neorg.khim. 2 no.6:1289-1293 Je '57. (MIRA 10:10)

1.pedagogicheskiy institut im. N.V. Gogolya.
(Sodium compounds)

Baram, O.M.

TOVBIN, M.V.; BARAM, O.M.

The role of polymorphic conversions in the mechanism of heterogenous catalytic processes. Ukr. khim. zhur. 23 no.5:567-572 '57.

(MLRA 10:11)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchnko, kafedra fizicheskoy i kolloidnoy khimii i Nezinskiy pedagogicheskiy institut.
(Catalysis)

DINZBURG, B.N.; SAFRAY, B.A.; BARAMBOY, N.K.

Properties of vulcanizates from butadiene-nitrile rubber
combined with thermosetting resins. Kauch. i rez. 23 no. 7:
11-15 J1 '64. (MIRA 17:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut plennichnykh
materialov i iskusstvennoy kozhi.

BARAMBOYM, Bikolay Konstantinovich, prof., doktor khim. nauk;
SLONIMSKIY, G.L., prof., doktor khim. nauk, retsenzent;
ALEKSEYENKO, V.I., kand. tekhn.nauk, retsenzent; MINAYEVA,
T.M., red.; SHAPENKOVA, T.A., tekhn. red.

[Mechanochemistry of polymers; chemistry of mechanical processes involved in the treatment of high polymers] Mekhanokhimiya polimerov; khimiya mekhanicheskikh protsessov pererabotki vysokopolimerov. Moskva, Izd-vo nauchno-tekhn. lit-ry RSFSR, 1961. 250 p. (MIRA 15:2)

(Polymers)

BC

PROCESSES AND PROPERTIES INDEX

"VIRK" thermoelectric relay. S. A. PAVLOV
and H. K. RYKHOV (J. Appl. Chem. Russ., 1934,
7: 437-438).—A simple and inexpensive electric
thermo-regulator is described. R. T.

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

SECTION 1: 1-10										SECTION 2: 11-20										SECTION 3: 21-30										SECTION 4: 31-40										SECTION 5: 41-50									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

Mechanical destruction of proteins. I. Milling of

collagen and its derivatives. N. A. Pavlov and N. K. Harambaid (Technol. Inst. Consumer Ind., Moscow). *Kolloid. Zh.* 11, 420-30(1949).—When skin powder (I), cooked skin powder (boiled in H_2O for 10 min.), and gelatin (II) were ground in a ball mill at 20° for 85, 60, and 15 hrs., resp., they became sol. in cold H_2O , giving sols. of low η . Further milling (for up to 120 hrs.) had no addnl. effect on η . The temp. coeff. of η of these sols. was almost equal to that of H_2O , i.e. much smaller than before milling. The relative amts. of amino N and of polypeptide N were not affected by milling. I, milled for 170 hrs., had color reactions similar to those of heat-degraded II; its sols. were pptd. by $I_2 + KI$ and $SnCl_2$ but not by 50% $EtOH$; it gave no reaction with $HgNO_3$, but the Millon and Cernigross reactions were very intensive, showing accumulation of cyclic structures. Effort was made to prove this accumulation by extn. with $CHCl_3$, but only suspensions (very stable) resulted. J. J. Bikerman

BARAMBOIM, N.K.

The change in the hydrophilic properties of the surface of high-molecular substances during the process of dry grinding. Legkaya Prom. 10, No.4, (MLRA 3:4)

Z2 '50.

(CA 47 no.18:9109 '53)

31

CA.

/ Structure of synthetic leather. S. A. Pavlov and N. K.
Baramkulov. *Izvestiya Prom.* 10, No. 12, 33-4 (1950).
Characteristics of leather and physicochem. characteristics
/ of film-forming substances, and structure film of synthetic
leather for uppers on a fiber base. B. Z. Kamich

CA

Mechanical destruction (milling) of proteins. II. Effect of tanning of proteins on the alteration of their properties during milling. N. K. Baranboim (Technol. Inst. Consumer Ind., Moscow). *Kolloid. Zhur.* 13, 83-8 (1951); cf. C.A. 46, 2823a. — Collagen, treated for 24 hrs. with 2% (specimen I) or 10% (specimen II) HCHO at pH 8-8.5, was ground in a ball mill for t hrs. I was almost insol. in H₂O, but 30% of it became sol. after $t = 180$; at the same time I became "fusible." The adsorption of orange I and safranine O, and the base neutralization capacity were independent of t , but the acid neutralization capacity decreased and the adsorption of Congo red increased on increasing t ; this shows that milling uncovers NH₂ groups which immediately react with the adsorbed HCHO. The viscosity η of aq. suspensions of II is little changed by t , but η of I suspensions increases with t more the lower the temp. of the measurement (12-70°). Specimen II, when ground in water, showed no change of adsorption capacity for orange and safranine and no change of the neutralization capacities, but the fact that adsorption of Congo red increased with t showed that the total surface was augmented by milling. I ground in water gave a suspension whose η rapidly increased on aging. J. J. Bikerman

✓ Mechanical destruction of high-molecular substances

the acid and alk capacity of the viscosity is increased

BARAMBOYM, N.K.

"Mechanical Destruction of High Molecular Substances." Dr Chem Sci, Inst of Physical Chemistry, Acad Sci USSR, Moscow, 1955. (KL, No 18, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16)

"APPROVED FOR RELEASE: 06/09/2000

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CIA-RDP86-00513R000103420017-3"

BARAMBOY, N. K.

/ Artificial leather - A. Pavlov and N. K. Baramboi

BARAMBOYN, N.K.

USSR/Chemical Technology - Chemical Products and Their Application. Leather. Fur. Gelatin. Tanning Agents. Technical Proteins I-29

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 14055

Author : Baramboyn N.K.
Inst : Moscow Technological Institute of the Light Industry
Title : Determinations of Three-Dimensional High Molecular Substances on Mechanical Disintegration in Different Media

Orig Pub : Nauch. tr. Mosk. tekhnol. in-ta legkoy prom-sti, 1956, No 6, 45-51

Abstract : Investigated were the specific features of the process of disintegration of three-dimensional systems -- scleroproteins with natural, and also with weakened or reinforced spatial, chemical, intermolecular bonds. Grinding was carried out in gaseous (air) and liquid (water, alcohol, gasoline) media. It was found that limit of

Card 1/3

- 436 -

USSR/Chemical Technology - Chemical Products and Their Application. Leather. Fur. Gelatin. Tanning Agents. Technical Proteins I-29

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 14055

comminution is correlated with chemical nature of polymer and nature of the surrounding medium. The less frequent are the cross linkages of the polymer, the greater is the possible degree of comminution of the polymer in an aerial medium. In liquid media, the limit of comminution is determined by the nature of polymer and liquid, presence or absence of an affinity between them. Grinding in aqueous medium promotes disintegration of structure over surfaces bound by hydrogen and salt linkages. In the course thereof takes place primarily fiber separation without brittle fracture of the fibers. Grinding in benzene and other non-polar solvents, which do not wet the fibers, produces only fracture, brittle severance and deformation of fibers. Effect of the medium must be taken into account on carrying out any

Card 2/3

- 437 -

USSR/Chemical Technology - Chemical Products and Their I-29
Application. Leather. Fur. Gelatin. Tanning Agents.
Technical Proteins

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 14055

operations of processing of three dimensional polymers
which involve intensive mechanical action.

Card 3/3

- 438 -

BARAMBOYM, N. K.

Category: USSR/Chemistry of High-Molecular Substances

P.

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30914

Author : Baramboym N. K.

Inst : Moscow Technological Institute of the Light Industry

Title : Mechanical Activation of Chemical Destructive Reactions

Orig Pub: Nauch. tr. Mosk. tekhnol. inst legkoy prom-sti, 1956, sb. 7,
57-67

Abstract: A theoretical substantiation is provided of lowered stability of deformed macromolecules of polymers in active external media, and also of the probability of a radical induced and of a "chemical" termination of the chains on mechanical breakdown. It was ascertained that increase of activity, or the reactivity of macromolecules of high-polymers, on breakdown, is the result of deformation of valency angles and increase of interatomic distances. Termination of macromolecules with formation of free macroradicals is more probable in those cases when the energy set free on breach of the chain linkage is smaller than the energy of activation of interaction with the medium.

Card : 1/1

-20-

②
unrec
Name: BARAMBOYM, Nikolay Konstantinovich

Dissertation: Mechanical destruction of substances
of high molecular weight

Degree: Doc Chem Sci

Affiliation: Moscow Technological Inst of Light
Industry imoni Kaganovich

Defense Date, Place: 12 May 55, Council of the Inst of
Physical Chemistry, Acad Sci USSR

Certification Date: 7 Jul 56

Source: BMVO 5/57

BARAMBOYM, N.K.

"Transition phenomena in polymers under the influence of high pressure,"
a paper presented at the 9th Congress on the Chemistry and Physics of High Poly-
mers, 28 Jan-2 Feb 57, Moscow, Polytechnic Inst., Moscow (Kuganovitch)

B-3,084,395

BARAMBOYM. N.K., doktor khimicheskikh nauk; KRAMORENKO, V.I.

~~XXXXXXXXXXXXXXXXXXXX~~
Use of adhesive substances made of industrial wastes. Leg.prom.17
44-45 Mr '57. (MLRA 10:4)

(Adhesives) (Factory and trade waste)

Baran Boyin, N.K.

BARANBOYN, N.K., doktor khim. nauk; KUDRYASHOVA, Ye.N.

New impregnating materials for thread used in the shoe industry.
Leg. prom. 17 no.10:46-47 O '57. (MIRA 10:12)
(Shoe industry--Equipment and supplies)

20-114-3-32/60

AUTHOR: Baramboym, N. K.

TITLE: Kinetics of Mechanical Destruction of High Polymers
(Kinetika mekhanicheskoy destruktzii vysokopolimerov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 3, pp. 568-570 (USSR)

ABSTRACT: The destruction of macromolecules of high polymers in the case of different kinds of actions is one of the most specific kinds of destruction and is related to the considerable size of these molecules. The macroradicals formed on this occasion can undergo various typical recombinations. . On this occasion branching complex structures, copolymers etc., are formed. In the presence of active acceptors such as oxygen of the air, macroradicals may stabilize, which results in destruction. Such a case is discussed in the present paper. Destruction has hitherto been studied only in very few special cases and mainly for very special purposes in spite of its enormous theoretical and practical importance. Modern working practice necessitates either the application of the rupture or its consideration on the occasion of mechanical processing. In the course of the recent times works have proved

Card 1/3

20-114-3-32/60

Kinetics of Mechanical Destruction of High Polymers

the possibility of an extended application in practice and in connection with the projecting of a number of original processes. Lack of systematic investigations concerning the dependence of the process on the chemical properties of the polymer, on exterior conditions etc. do not make any generalization, not even in first approximation, possible. For the investigation of destruction an original device was used. Values of finite mechanical destruction for polyvinylacetate ($M_{\infty} = 11000$), acetylcellulose (10000), polymethylmetacrylate (9000), polystyrene (7000) and polyvinylalcohol (4000) are mentioned. It follows therefore that, if not only the monomer can form the boundary of the chemical or thermal destruction but also its fission products, this boundary is a chain fragment, the quantity of which is given by a function of the chemical property (the same conditions prevailing). This fragment M_{∞} is not in connection with the quantity of the mechanical segment of the polymer concerned as it depends on concrete conditions, i.e. on the carrying out of the mechanical cracking. Probably the boundary for each polymer in the general case depends not only on its chemical properties, it is a function of temperature as well as of the

Card 2/3

20-114-3-32/60

Kinetics of Mechanical Destruction of High Polymers

milieu, and also of the frequency of mechanical action. Because of this characteristic property of mechanical destruction it is different from all other kinds and it was observed up to now in the case of all polymers investigated. An equation for the kinetic curves is given. The same equation can also be derived from theoretical investigations. The whole gives a complete picture of mechanical destruction of amorphous glazed polymers. There are 3 figures and 8 references, 7 of which are Slavic.

ASSOCIATION: Moscow Technological Institute for Light Industry
(Moskovskiy tekhnologicheskii institut legkoy promyshlennosti)

PRESENTED: December 13, 1956, by V. A. Kargin, Member of the Academy

SUBMITTED: November 29, 1956

Card 3/3

Baramboym, Nikolay Konstantinovich

PAVLOV, Sergey Aleksandrovich, prof.; AVILOV, Aleksey Alekseyevich,
kand.tekhn.nauk; BARAMBOYM, Nikolay Konstantinovich, prof.;
MONASTYRSKAYA, Mariya Solomonovna, dotsent; KHROMOVA, Nina
Sergeyevna, dotsent; KUZ'MINSKIY, A.S., prof., retsenzent;
KIPNIS, B.Ya., inzh., retsenzent; MINAYEVA, T.M., red.;
GUSEVA, A.I., red.; MEDVEDEV, L.Ya., tekhn.red.

[Technology of artificial leather] Tekhnologiya iskusstvennoi
kozhi. Pod red. S.A.Pavlova. Moskva, Gos.nauchno-tekhn.izd-vo
lit-ry po legkoi promyshl., 1958. 654 p. (MIRA 12:4)
(Leather, Artificial)

BARAMBOYM, N.K., doktor khim. nauk.

Classification and analysis of methods used for production of
porous polymer systems. Izv. vys. ucheb.zav.; tekhnolog.prom. no.4:
102-108 '58. (MIRA 11:12)

1. Moskovskiy tekhnologicheskii institut legkoy promyshlennosti.
(Synthetic fabrics)

BARAMBOYM, N.K., prof.; KAPANIN, V.V., inzh.

Synthesis and investigation of ingredients with combined action
for rubber mixtures. Izv.vys.ucheb.zav.; tekhnolog.prom. no.4:109-112
'58. (MIRA 11:12)

1.Moskovskiy tekhnologicheskoy institut legkoy promyshlennosti.
(Rubber, Synthetic)

BARAMBOYM, N.K.,prof.; KIPNIS, Yu.B.,inzh.

Using the dilatometric method for determining the concentration of gas
and liquid mixture components. Leg. prom. 18 no.4:35-36 Ap '58.
(Dilatometer) (MIRA 11:4)

AUTHOR: Baramboym, N. K.

76-32-2-30/38

TITLE: The Kinetics of the Mechanical Destruction of High Polymers
(Kinetika mekhanicheskoy destruktzii vysokopolimerov)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 2, pp. 433-441
(USSR).
Received: April 22, 1958.

ABSTRACT: The author only gives a general quantitative evaluation of the mechanical destruction of a number of polymers. It is planned to describe in detail this process at some later time. The polymers investigated here belong to those with rigid chains and in the case of an impact effect mainly show an elasticity within the whole range of the temperatures applied for destruction. The comparison of the course of destruction processes of various polymers was carried out according to the calculation of the molecular weight using viscosimetric data. In this equations, which take into consideration characteristic features of each single polymer, being also checked by other methods of the determination of molecular weights, were used. The course of the kinetic curve proves the presence of a destruction limit. This proves the assumption, that the fragment of a chain (the magnitude of which on otherwise identical conditions

Card 1/4

The Kinetics of the Mechanical Destruction
of High Polymers

76-32-2-30/38

is a function of the chemical nature of the polymer) forms the final stage of the mechanical destruction, when not only a monomer but also the products of its decomposition can be the final stage of chemical or thermal destruction. This characteristic feature typical for mechanical destruction which differentiates it from other types of destruction was observed in all polymers investigated until now. Most probably the final decomposition stage of each polymer in a general case does not only depend on its chemical nature but is also a function of temperature of the medium and of the frequency of mechanical action. The reasons for this will be explained in further works. - By means of an analysis of the obtained kinetic curves the equation for the limit of the destruction of amorphous polymers was found according to the gradual approximation process:

$$M_{\tau} = AE^{-k\tau} + M_{\infty}. \quad M_{\tau} \text{ denoting the molecular weight at the instant } \tau,$$

τ denoting the destruction period, k denoting the destruction constant. $A = M_0 - M_{\infty}$, M_0 denotes the initial molecular weight.

Card 2/4

M_{∞} denoting the final molecular weight after an infinite destruc-

The Kinetics of the Mechanical Destruction of High Polymers 76-32-2-30/38

tion period. - The following parameters for the degree of destruction are suggested: φ_1 denotes the ratio between the decrease of molecular weight at a given instant τ , and the maximum possible decrease. φ_2 denotes the ratio between the number of ruptured bonds at the moment τ and the possible number of ruptures; this clearly shows the difference in the case of the approximation of the destruction limit.

$$\varphi_3 = \frac{M_{\infty}}{M_{\tau}}. \quad \varphi_3 \text{ in general changes from zero with infinitely}$$

great molecular weight to unity when reaching the limit of destruction. By means of this index any states of the polymer can be described and compared with each other.

There are 6 figures, 1 table, and 27 references, 17 of which are Soviet.

ASSOCIATION: Technological Institute for Light Industry and the Institute for Physical Chemistry, AN USSR, Moscow (Tekhnologicheskii institut legkoy promyshlennosti i Institut fizicheskoy khimii Akademii nauk SSSR, Moskva)

Card 3/4

The Kinetics of the Mechanical Destruction
of High Polymers

76-32-2-30/38

SUBMITTED: December 13, 1956.

1. Polymers--Mechanical properties
2. Polymers--Test methods
3. Polymers--Temperature factors
4. Polymers--Molecular weight
5. Mathematics

Card 4/4

AUTHOR: Baramboym, N. K.

76-32-4-12/43

TITLE: The Formation of Free Macroradicals in the Mechanical Destruction of Polymers (Ob obrazovanii svobodnykh makro-radikalov pri mekhanicheskoy destruktsii polimerov)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 4, pp. 806-810 (USSR)

ABSTRACT: In order to exclude various secondary factors saturated polymers (polystyrene, polymethylmetacrylate and polyvinylacetate) were used in the investigations, and as acceptor the inert easily identifiable carbon tetrachloride was taken; the combined polymers and those containing carbon tetrachloride were ground mechanically in steel ball mills at -100C. 2% solutions of the destruction products were precipitated with ethynol and then were nephelometrically investigated. The observation made in this pointed at a partial formation of "mechanical" copolymers which was proved by determinations of the saponification number of the fractions. The formation of free macroradicals also observed in the destruction was closer investigated by grinding in a colloid mill a polymetacrylate solution, while the

Card 1/2

The Formation of Free Macroradicals in the Mechanical
Destruction of Polymers

76-32-4-12/43

experiments with carbon tetrachloride showed that the formed free radicals react with the medium and form corresponding compounds which, in a concrete case lead to the chemical binding of chlorine. Finally the author thanks V. A. Kargin, Member of the Academy of Sciences, for his consultations. There are 3 figures and 7 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy tekhnologicheskoy institut legkoy promyshlennosti; Akademiya nauk SSSR Institut fizicheskoy khimii (Moscow Technological Institute of Light Industry; Physico-Chemical Institute, AS USSR)

SUBMITTED: December 13, 1956

AVAILABLE: Library of Congress

1. Polymers--Properties 2. Free radicals 3. Carbon tetrachloride
--Applications

Card 2/2

AUTHOR: ~~Baramboym, N.K.~~ 76-32-5-14/47

TITLE: The Effect of the Character of the Gaseous Medium on the Mechanical Destruction of Polymers (Vliyaniye kharaktera gazovoy sredy na mekhanicheskuyu destrukttsiyu polimerov)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp. 1049-1054 (USSR)

ABSTRACT: The three polymers to be investigated were ground in steel ball mills in an air-nitrogen atmosphere at $0-10^{\circ}$, and then were investigated. From the results obtained can be seen that the dependence of the destruction on the medium is much stronger and clearer than the earlier observed dependence on the temperature. A strong increase of the velocity of destruction in the presence of oxygen was observed, which is explained by the effect of oxygen as acceptor of the free radicals forming in the destruction; other possibilities are, however, not excluded. The graphically represented function of the viscosity on the concentration shows a decrease of the asymmetry of the particles of the destruction products, while investigations of

Card 1/3

The Effect of the Character of the Gaseous
Medium on the Mechanical Destruction of Polymers

76-32-5-14/41

the fractions showed that destructions in the air effect an increase of the low-molecular fraction, the results obtained pointing at an essential difference in the chemical structure of the polymers ground in air and in nitrogen. In the first case more oxidation products with relatively changed main groups are obtained, with an analogous change having been observed as function of the destruction temperature, which fact is explained by the impeding effect of the secondary oxidation processes in the case of a temperature drop. Also a different change of the mechanical properties of the polymers by the two types of destruction was observed, which, in connection with the above mentioned ones clearly points at the influence of oxygen on the process of mechanical destruction of saturated carbo- and hetero-linear high-molecular compounds. The author thanks V.A. Kargin for his consultation on this work. There are 9 figures and 8 references, 3 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut fizicheskoy khimii i
tekhnologicheskoy promyshlennosti Moskva
(Moscow Institute for Physical Chemistry and Technological
Institute for Light Industry, AS USSR)

Card 2/3

The Effect of the Character of the Gaseous Medium 76-32-5-14/47
on the Mechanical Destruction of Polymers

SUBMITTED: December 13, 1956

1. Polymers--Mechanical properties 2. Polymers--Physical
properties 3. Gases--Chemical reactions 4. Polymers--
Test results

Card 3/3

AUTHOR: Baramboym, N. K.

SOV/ 76-32-6-9/46

TITLE: The Temperature Dependence of the Mechanical Breakdown Rate of High Polymers (Temperaturnaya zavisimost' skorosti mekhanicheskoy destrukttsii vysokopolimeroov)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 6, pp.1248-1251
(USSR)

ABSTRACT: In order to obtain evidence concerning this problem, experiments dealing with the mechanical destruction of a number of vitreous polymers were conducted at varying temperatures, including rather low ones. It is pointed out that the destruction begins where the creeping capability is exhausted. At a temperature drop the polymer passes into the range of high elasticity, the deformation leading to the formation of critical stresses and to a destruction of the macromolecule. Experiments conducted on ball mills with polyisobutylene on the one hand and polyvinylchloride gelatin and polyvinyl alcohol on the other hand showed that the mechanical properties are dependent upon the temperature within a certain temperature interval. Polyisobutylene passes through three

Card 1/3

SOV/ 76-32-6-9/46

The Temperature Dependence of the Mechanical Breakdown Rate of High Polymers

states in the temperature interval under consideration: a vitreous, a highly elastic and a viscous-liquid one. It is concluded that a high temperature coefficient of destruction corresponds to the highly elastic state, whereas this coefficient practically equals zero in the vitreous state. In this connection it was found that in spite of this fact no transition to the vitreous state takes place with gelatin. At temperatures of -70° , however, a considerable modification of the mechanical properties occurs. It was also observed by V. A. Kargin in hetero-chain polymers that the brittleness sharply increases at temperatures corresponding to the vitrification of non-polar parts of the chains of hydrocarbons. The conclusion is drawn that the temperature coefficient of mechanical destruction is negative, that is to say, that the higher the temperature is the smaller will be the destruction at otherwise identical and stable conditions. As a conclusion it is stated that the influence of temperature on the intensity of mechanical destruction is determined by the degree of the temperature dependence of the mechanical properties of the polymers. There are 4 figures and 5 references, 3 of which are Soviet.

Card 2/3

SOV/ 76-32-6-9/46

The Temperature Dependence of the Mechanical Breakdown Rate of High Polymers

ASSOCIATION: Akademiya nauk SSSR, Institut fizicheskoy khimii, Moskva;
Moskovskiy tekhnologicheskii institut legkoy promyshlennosti
(Moscow, Institute of Physical Chemistry AS USSR; Moscow
Technological Institute of Light Industry)

SUBMITTED: December 13, 1956

1. Polymers--Mechanical properties
2. Polymers--Decomposition
3. Polymers--Temperature factors
4. Polymers--Test results

Card 3/3

BARAMBOYM, N.K., doktor khim.nauk, prof.; ZAYTSEVA, Ye.V., inzh.

Effect of the composition of the solution and of the drying system on the microstructure and moisture permeability of nonplasticized polyamide films. Izv.vys.ucheb.zav.; tekhn.leg. prom. no.5:38-44 '59. (MIRA 13:4)

1. Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti.
Rekomendovana kafedroy tekhnologii iskusstvennoy kozhi.
(Leather, Artificial) (Polyamides)

3(4)

SOV/74-28-7-4/5

AUTHOR: Baramboym, N. K.

TITLE: Problems of the Mechanochemistry of High Polymers (Problemy mekhanokhimii vysokopolimerov)

PERIODICAL: Uspekhi khimii, 1959, Vol 28, Nr 7, pp 877 - 898 (USSR)

ABSTRACT: The field of investigations dealing with phenomena at the border between mechanics and chemistry has gained in importance in the last few years. This discipline, which is called mechanochemistry, comprises two main fields: 1) Investigation of chemical alterations of matter effected by mechanical force; 2) Investigation of mechanical processes caused by chemical action upon matter. These two fields have apparently no intrinsic connection. They can be brought in relation with one another neither by a common origin of the phenomena nor by uniform methods of investigation so that they even call for separate names. The field of chemical processes due to mechanical effects ought to be called mechanochemistry, the field of mechanical processes which are due to chemical action chemomechanics. In order to ensure a further independent development of both fields it is necessary to define their limits

Card 1/2

Problems of the Mechanochemistry of High Polymers

SOV/74-28-7-4/5

and their names. The present paper aims at an explanation of the present stage of development and the future perspectives of mechanochemistry proper. As it was impossible to present in this article an exhaustive survey of all the work done in this field, the problem was stated in the natural order of the process sequence. Persons interested in important details of the mechanochemical processes occurring in the treatment of polymers should refer to the previously published pertinent surveys (Refs 64 and 101). There are 101 references, 68 of which are Soviet.

ASSOCIATION: Moskovskiy tekhnologicheskoy in-t legkoy promyshlennosti
(Moscow Technological Institute of Light Industries)

Card 2/2

ZAYTSEVA, Ye.V., inzh.; BARAMBOYN, N.K., prof., doktor khimicheskikh nauk

Effect of the drying method on the microstructure and moisture permeability of plasticized polyamide films. Izv.vys.ucheb. zav.; tekhnolog.prom. no.6:23-27 '59. (MIRA 13:5)

1. Moskovskiy tekhnologicheskii institut legkoy promyshlennosti. Rekomendovana kafedroy tekhnologii iskusstvennoy kozhi. (Leather substitutes) (Polyamides)

81603
S/190/60/002/02/02/011
B004/B061

53830

AUTHORS:

Baramboym, N. K., Gorodilov, V. N.

TITLE:

The Molecular Weight of Aliphatic Polymers as a Function
of the Degree of Dispersity Resulting From Their
Mechanical Grinding

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 2,
pp. 197-199

TEXT: At first the authors discuss publications (Refs. 1 - 13) on the
formation of free radicals of mechanically ground vitrified polymers.
The products obtained by mechanical "cracking" differ from the original
polymer not only in their smaller molecular weight but also in other
properties such as partial solubility. An attempt was made here to find
a functional connection between dispersity and average molecular weight.
Polystyrene and polymethylmethacrylate films were at first, after
evaporation of the solvent, coarsely dispersed, and then finely in an
M-10 (M-10) vibration mill (polystyrene after freezing) in liquid

Card 1/2

81603

The Molecular Weight of Aliphatic
Polymers as a Function of the Degree of
Dispersity Resulting From Their Mechanical
Grinding

S/190/60/002/02/02/011
B004/B061

nitrogen, polymethylmethacrylate at 20 - 30°C). The ground polymers were first separated by sifting, and the highly disperse fractions were separated by sedimentation in a dry nitrogen stream. The molecular weight of the fractions was viscosimetrically determined. The results, given in Figs. 1 and 2, show a typical dependence of the molecular weight, M , on dispersion, S , as a function $M = f(S)$. This function can be used in practice. There are 2 figures and 14 references: 11 Soviet, 2 German, and 1 US.

ASSOCIATION: Moskovskiy tekhnologicheskii institut legkoy
promyshlennosti (Moscow Technological Institute of the
Light Industry)

SUBMITTED: December 7, 1958

Card 2/2

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S/190/60/002/008/005/017
B004/B054

AUTHORS: Baramboym, N. K., Sviridova, V. A.

TITLE: Destruction of Low-pressure Polyethylene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 8,
pp. 1193-1195

TEXT: The authors studied the control of the molecular weight of low-pressure polyethylene to lower the temperature of its processing and improve its plastic properties. For this purpose, they used mechanical destruction and cracking under the action of free radicals generated by initiators. To obtain comparable data on the effect of destruction, experiments were conducted both with nonstabilized polyethylene and with addition of acceptors (Captax, Neozone D), monomers (α -bromo styrene, maleic anhydride), and initiators (benzoyl peroxide, isopropyl benzene hydroperoxide, tert-butyl benzene hydroperoxide). Additions amounted to 2% of the polymer. Mechanical treatment was conducted by rollers which were cooled by water to 20-25°C, or heated by vapor to 130°C. Cracking was performed in a thermostat at 170°C and 200°C. The efficiency of destruction was tested: 1) by determining

Card 1/4

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Destruction of Low-pressure Polyethylene

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the solubility in toluene at 100°C; 2) by determining the softening temperature; 3) by determining the intrinsic viscosity of the 1% solution in Decalin at 135°C. The results for polyethylene with an initial molecular weight of 300,000 are given in three tables containing the following data:

Addition	Solubility, %	Softening temperature	Molecular weight	
			cold-rolled, 30°C	rolled at 130°C
without addition	37	133	250,000	practically unchanged
Neozone D	58	129	158,000	
maleic anhydride	60	128	126,000	
Captax	64	128	112,000	-
α-bromo styrene		127	112,000	79,500
i-butyl hydroperoxide		127	126,000	31,600
i-propyl hydroperoxide		123	100,000	28,800
benzoyl peroxide	51	117	-	20,400

The dependence of the solubility of low-pressure polyethylene, rolled with

Destruction of Low-pressure Polyethylene

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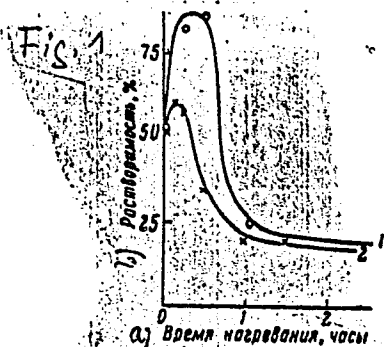
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benzoyl peroxide, on the duration of thermal treatment at 170° and 200°C is shown by Fig. 1. Hence, it appears that the effect of destruction by free radicals has a maximum. The solubility decreases with prolonged treatment due to new structuration. Thus, it is possible with the method described to change the molecular weight and properties of low-pressure polyethylene in a wide range, and make them similar to those of high-pressure polyethylene (solubility, 100%, softening temperature 110°C). The authors mention V. A. Kargin and T. I. Sogolova. There are 1 figure, 3 tables, and 6 Soviet references.

ASSOCIATION: Moskovskiy tekhnologicheskii institut legkoy promyshlennosti (Moscow Technological Institute of the Light Industry).

SUBMITTED: March 24, 1966

Card 3/4



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B004/B054

Legend to Fig. 1: Change in solubility of low-pressure polyethylene rolled with 2% benzoyl peroxide with subsequent thermal treatment 1): 170°C; 2): 200°C, a): time of heating, hours; b): solubility.